d. Remarks

Claims 1-24 and 27 have been amended to read as shown below. Claims 1, 2, 11, and 12 are independent.

The Office Action requires a more descriptive title. The specification has been amended to replace the original title with a new, more descriptive title, as required in the Office Action.

The Examiner is thanked for the indication that original Claims 5-7 and 15-17 recited allowable subject matter. The Office Action Summary attached to the Office Actions states that those claims are objected to, although no such objection is set forth in the body of the Office Action. Nonetheless, those claims have not been written in independent form at the present time, since the base claims from which they depend are believed to be patentable, for the reasons set forth below.

Claims 1-4, 8-14, and 18-29 were rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent 5,872,541 (Yoshioka et al.).

As amended, independent Claim 1 is directed to a substrate structure which is a precursor to an electron source, and on which an electron emitting device of the electron source is to be disposed. The substrate structure comprises a substrate and an insulating material layer provided on the substrate. The insulating material layer has a plurality of partially exposed metal oxide particles on its surface.

By virtue of the metal oxide particles being included in the substrate structure, charge-up and diffusion of ions, such as Na or K, can be prevented or at least substantially minimized.

Yoshioka et al. teaches a substrate 4 on which an insulating layer 11 is provided, and wherein electrodes 1 and 2 are disposed on the layer 11. The electrodes 1 and 2 are comprised of low-resistance materials for use in voltage application, and an electron-emitting region 10 comprising fine particles 9 dispersed between electrodes 1 and 2 is provided (see, e.g., Fig. 8 and col. 8, lines 28-34). Col. 9, line 15 et seq. refers to an insulating layer 11 formed on substrate 4, electrodes 1 and 2 formed on layer 11, and fine particles 9 coated on an electrode gap region and arranged on the surface of the insulating layer 11 in electrode spacing L. Through a heating procedure, the fine particles 9 penetrate into low-melting glass, resulting in being included in the layer 11 or included to an extent that at least part of a particle is exposed from the layer 11.

The Office Action apparently contends that the fine particles (9) disclosed in Yoshioka et al. correspond to partially exposed metal oxide particles of the present invention. However, according to Figs. 8-11 and col. 8, lines 62-64 of Yoshioka et al., the fine particles 9 are disposed in and least partially form an electron-emitting area, and electrons are emitted from the fine particles 9.

According to Applicants' invention, on the other hand, metal oxide particles, and an insulating material layer including the particles (i.e., the SiO_2 layer), do not constitute or form an electron-emitting area, but instead constitute part of a substrate structure which is a precursor to an electron source, and an which an electron-emitting device of the electron source to be disposed. Applicants respectfully submit that nothing in Yoshioka et al. would teach or suggest such a substrate structure, and particularly one comprising a substrate and an insulating material layer provided on the substrate, wherein

the insulating material layer has a plurality of partially exposed metal oxide particles on its surface, as recited in Claim 1. Thus, Yoshioka et al. does not prevent charge-up and diffusion of ions such as Na or K, in the same manner as does the substrate structure of Claim 1.

For the foregoing reasons, it is believed that Claim 1 is clearly patentable over Yoshioka et al.

Amended independent Claim 2 recites features that are similar in many relevant respects to those of Claim 1 emphasized above, and also is believed clearly patentable over Yoshioka et al., for substantially the same reasons as is Claim 1.

Independent Claim 11, as amended, recites a substrate structure which is a precursor to an electron source, and on which an electron emitting device of the electron source is to be disposed. The substrate structure comprises a substrate, and an SiO_2 layer provided on the substrate. The SiO_2 layer has a plurality of partially exposed metal oxide particles on the surface.

For reasons substantially similar to those set forth above in connection with Claim 1, Applicants respectfully submit that nothing in Yoshioka et al. would teach or suggest a substrate structure having features as recited in Claim 11, and thus that claim also is believed clearly patentable over Yoshioka et al.

Amended independent Claim 12 recites features that are similar in many relevant respects to those of Claim 11, and also is believed clearly patentable over Yoshioka et al., for substantially the same reasons as is Claim 11.

The other claims in this application are each dependent from one or another of the independent claims discussed above and are therefore believed patentable for the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, the individual reconsideration of the patentability of each on its own merits is respectfully requested.

REQUEST FOR CONSIDERATION OF PREVIOUSLY CITED ART

The Office Action was not accompanied by an initialed Form PTO-1449 confirming that the art cited in Applicants' Information Disclosure Statement filed in the Patent and Trademark Office on August 24, 2001 was considered and made of record herein. A copy of the Information Disclosure Statement is attached hereto, with a copy of the return-receipt post card evidencing acknowledgment of such document by the Patent and Trademark Office mailroom. If the Examiner requires additional copies of any of the cited references, she is respectfully requested to telephone the undersigned. Applicants have not, to date, received confirmation that the art cited in that document was considered by the Examiner.

Accordingly, to complete the record, Applicants respectfully request that the Examiner forward a copy of initialed Form PTO-1449 confirming that the art cited in the mentioned Information Disclosure Statement has been considered and made of record herein.

CONCLUSION

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

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Director, the Commissioner for Patents
Washington, D.C. 20231

Date 08/24/01
Mo. Day Yr.

Atty. Docket 35.C15334

Application No. 09/846,364

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